POPULATION STRUCTURE OF SEA SCALLOPS IN COASTAL MAINE

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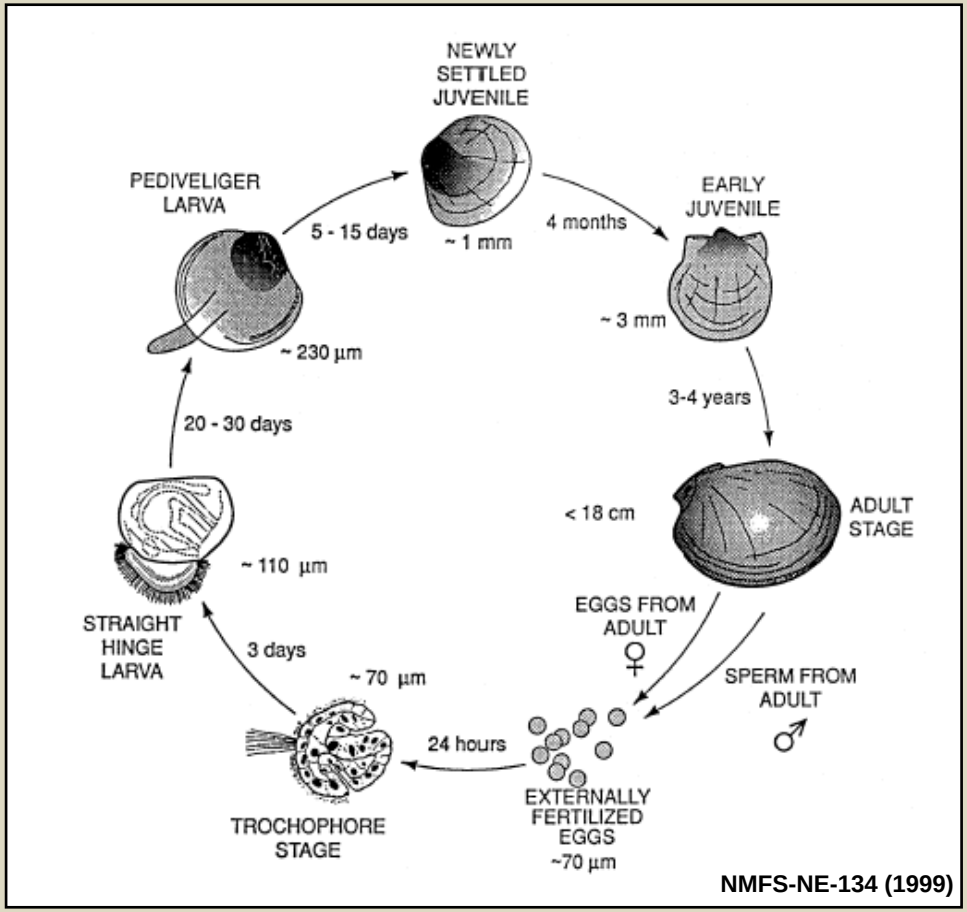
Population Structure

A population, or stock, is maintained by "local" processes;
fishing on one population does not affect neighboring populations

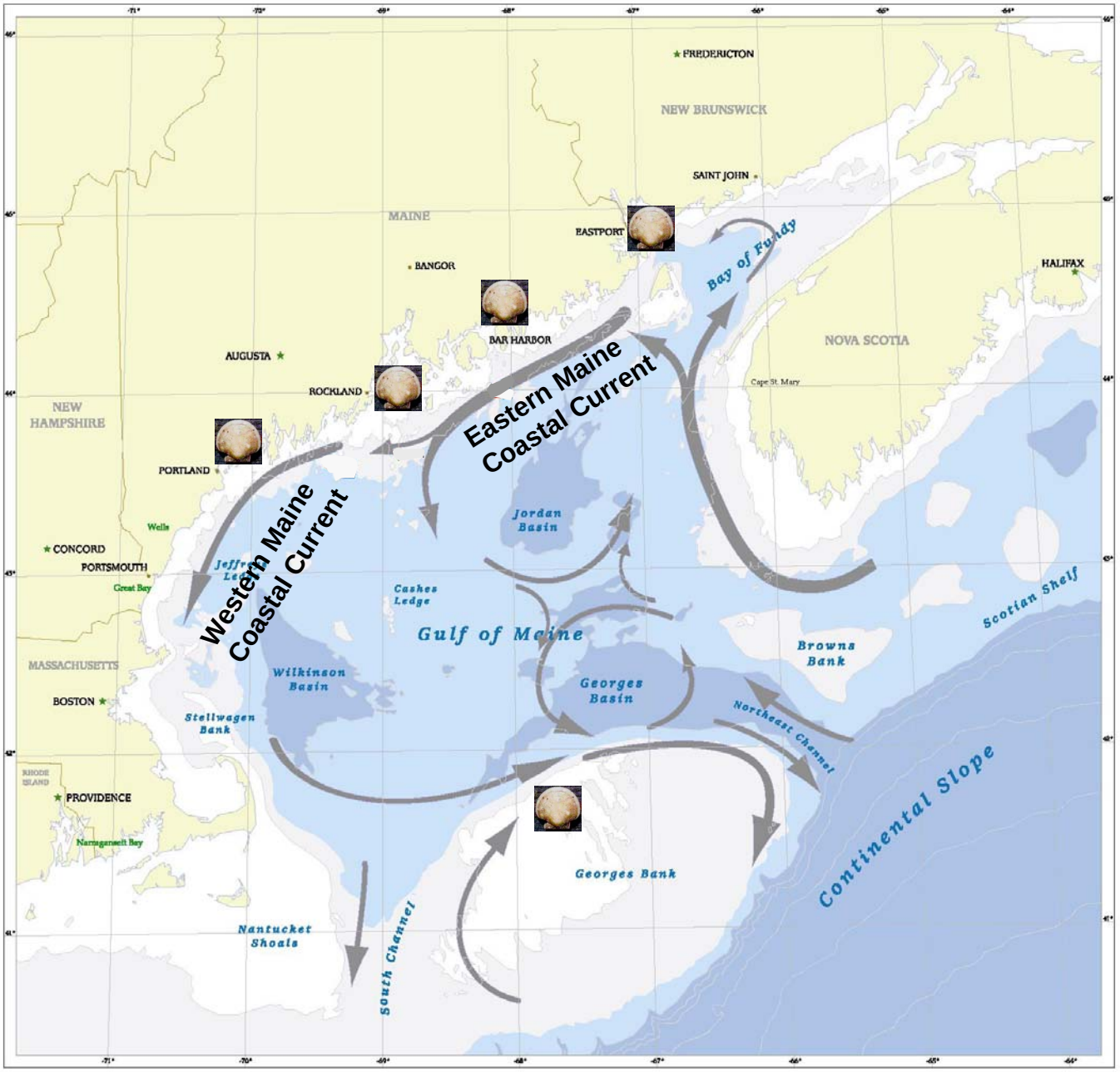


What can population genetics tell us about stock structure?

High migration → Small genetic differences (open populations)

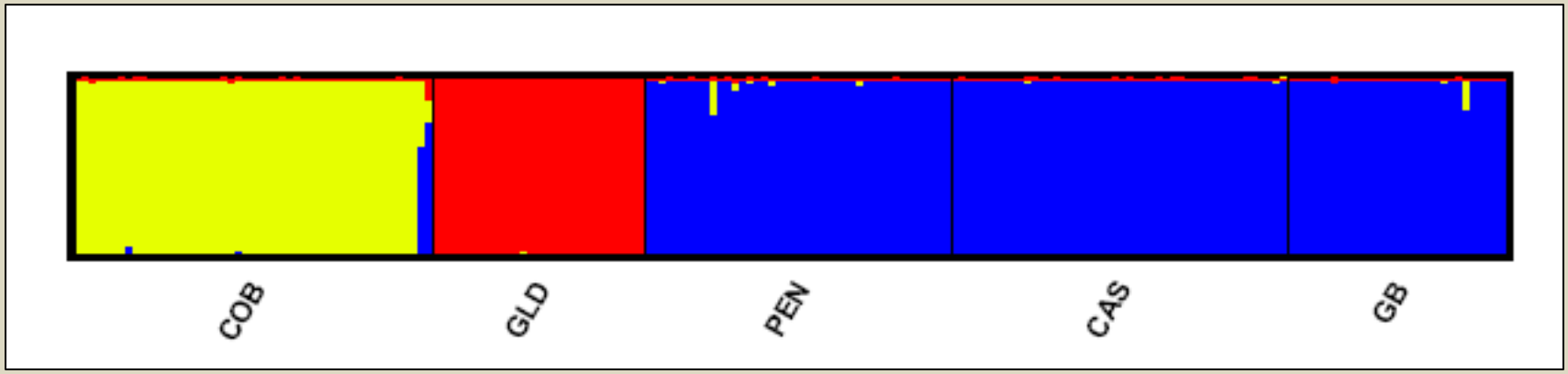
Low migration → Large genetic differences (closed populations)

Closed populations **do not rely on migration from other locations to sustain the population, and thus *can be considered separate stocks***



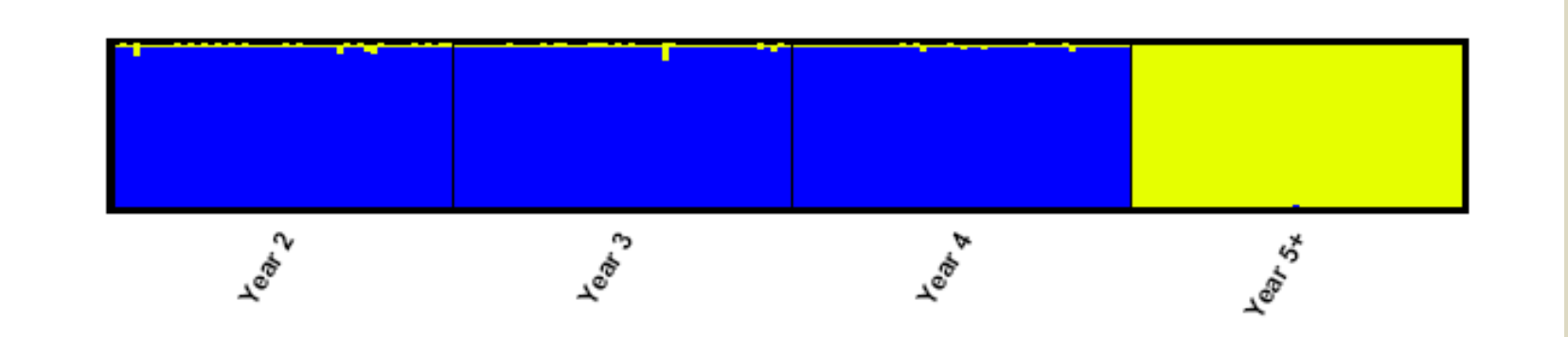
From Pettigrew et al. 2005

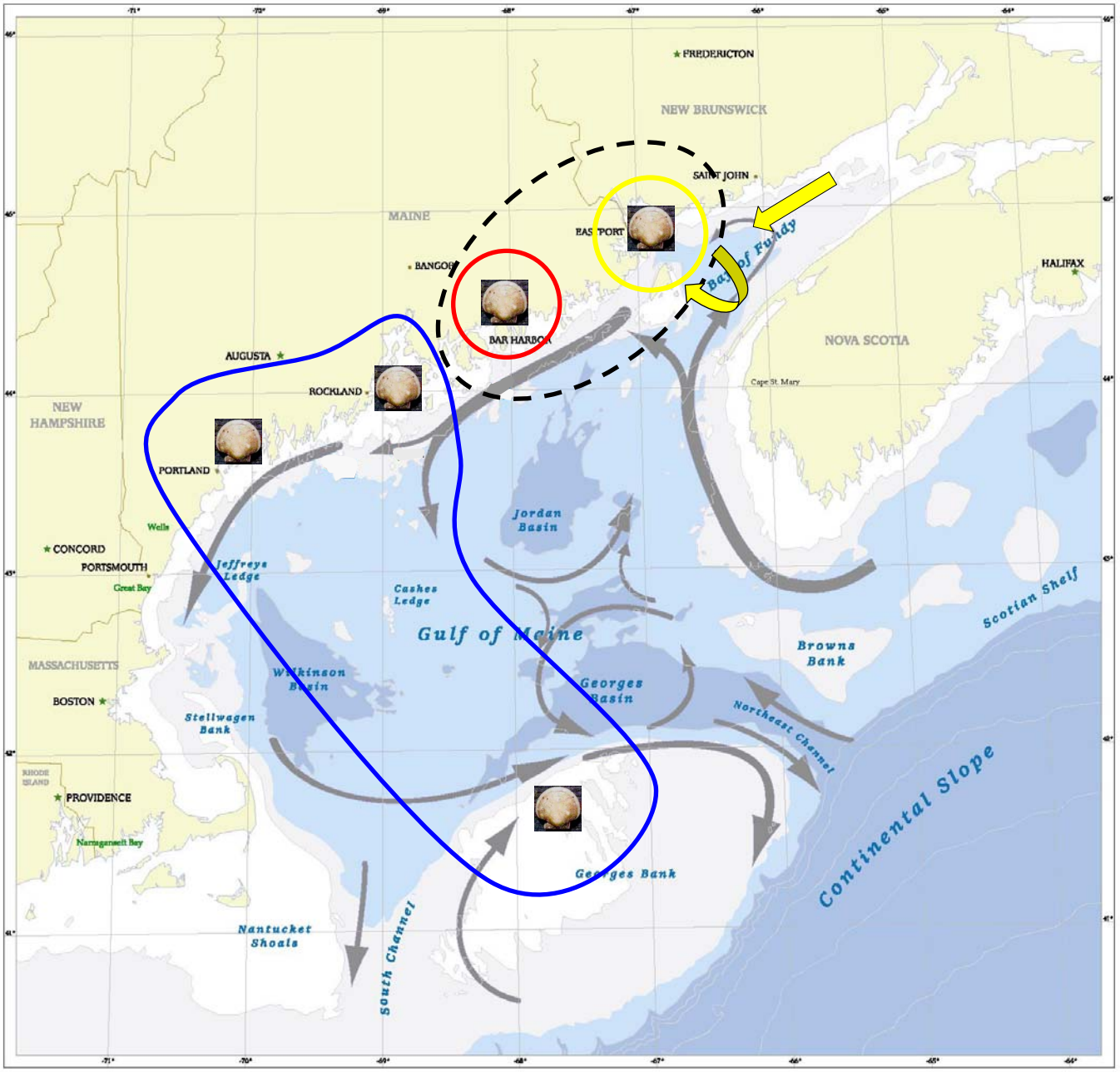
Most likely number of closed populations among locations sampled in the Gulf of Maine



Cobscook and Gouldsboro Bays are as different from each other as from the western Gulf of Maine.

Genetic differences among year classes in Cobscook Bay suggest more than one source of recruits





From Pettigrew et al. 2005

Future Research Questions

Larvae without borders: What is the level of migration from locations in Atlantic Canada?

Are genetic differences between eastern and western Gulf of Maine, and within eastern Gulf of Maine, ecologically significant?

How can larvae be tracked on ecological time scales?

Can genetic differences be detected on even smaller spatial scales in the eastern Gulf of Maine? Probably undersampled the eastern Gulf of Maine.

What are the potential sources of larvae for closed areas?